

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 226 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/KR 2004/002238 | International filing date (day/month/year) 3 September 2004 (03.09.2004) | Priority Date (day/month/year) 4 September 2033 (04.09.2033) |
| International Patent Classification (IPC) or national classification and IPC IPC ⁷ : B01D 71/02, 69/12 | | |
| Applicant SK CORPORATION | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I. ☒ Basis of the opinion
- II. ☐ Priority
- III. ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV. ☐ Lack of unity of invention
- V. ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI. ☐ Certain documents cited
- VII. ☐ Certain defects in the international application
- VIII. ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand 30.03.2005 | Date of completion of this report 9 November 2005 (09.11.2005) |
| Name and mailing address of the IPEA:AT Austrian Patent Office Dresdner Straße 87 A-1200 Vienna Facsimile No. 1/53424/200 | Authorized officer STEPANOVSKY M. Telephone No. 1/53424/135 |

Form PCT/IPEA/409 (cover sheet) (July 1998)

Express Mail No. EV713810757US

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/KR 2004/002238

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement) under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/KR 2004/002238

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

| | | | |
|--------------|-------------------------------|-------------|-----|
| 1. Statement | Novelty (N) | Claims 1-8 | YES |
| | | Claims ---- | NO |
| | Inventive step (IS) | Claims 1-8 | YES |
| | | Claims ---- | NO |
| | Industrial applicability (IA) | Claims 1-8 | YES |
| | | Claims ---- | NO |

Citations and explanations (Rule 70.7)

This examination report was made on the basis of the search report and written opinion of the Korean Patent Office, dated 09.12.2004.

Novelty:

The cited literature shows processes for the production of porous inorganic membranes. There could not be found a method of preparing a titania composite membrane for separating water/alcohol mixtures, the method comprising the steps of modifying macropores of a porous support by sequentially treating the macropores with silica xerogel and gamma-alumina sol, forming a titania surface layer according to a sol-gel process by coating said surface with titania sol and drying said membrane at 20-30°C and relative humidity of 50-70 % followed by calcining said membrane at 250-400°C. So the subject-matters of the present application are new, since they are not totally described in the cited literature.

Inventive step:

The resulting advantageous effects of the method of preparing a titania composite membrane for separating water/alcohol mixtures, the method comprising the steps of modifying macropores of a porous support by sequentially treating the macropores with silica xerogel and gamma-alumina sol, forming a titania surface layer according to a sol-gel process by coating said surface with titania sol and drying said membrane at 20-30°C and relative humidity of 50-70 % followed by calcining said membrane at 250-400°C, as claimed could not be foreseen, therefore the subject matters claimed meet the requirements of inventiveness.

Industrial applicability:

The industrial applicability of the titania composite membrane, of the present application is self-evident.